CLAIMS

1. A method for developing an application program, the method comprising:

displaying on a computer screen a toolbox having a plurality of icons, each icon corresponding to a program object that can be selected by a user, the program objects being configured to issue one or more respective events;

displaying on the computer screen a form window configured to hold symbolic representations of instantiations of program objects whose icons are selected from the toolbox, the selected program objects having a graphical user interface element;

displaying on the computer screen a designer window configured to hold symbolic representations of instantiations of all program objects whose icons are selected from the toolbox;

choosing, by the user, to graphically or textually define an event handler procedure corresponding to an instantiation of a selected program object whose symbolic representation is displayed in the designer window;

if the user chooses to graphically define the event handler procedure, performing the steps:

graphically defining the event handler procedure for the instantiation of the selected program object displayed in the designer window;

incorporating the graphically defined event handler procedure into the application program; and

if the user chooses to textually define the event handler procedure, performing the steps:

textually defining, within a code window displayed on the computer screen, the event handler procedure for the instantiation of the selected program object displayed in the designer window, the code window being configured to accept textual inputs from the user; and

incorporating the textually defined event handler procedure into the application program.

1   2.   The method of claim 1, further comprising:

2   graphically defining the event handler procedures within the designer window

3   by linking selected symbolic representations of program object instantiations.

1   3.   The method of claim 2, further comprising:

2   using graphical wire constructs to link pairs of selected symbolic representations

3   of program object instantiations within the designer window.

1   4.   The method of claim 3, further comprising:

2   modifying by textual input from the user at least one property, method or event

3   associated with one or more of the graphical wire constructs.

1   5.   The method of claim 1, further comprising:

2   adding, in response to the user adding a symbolic representation of an instantia-

3   tion of a program object having a graphical user interface element to the designer win-

4   dow, the symbolic representation of the program object having a graphical user inter-

5   face to the form window.

1   6.   The method of claim 1, further comprising:

2   including at least one ActiveX object among the program objects whose corre-

3   sponding icons are displayed in the toolbox.

1   7.   The method of claim 1, further comprising:

2   including at least one Component Object Model (COM) object among the pro-

3   gram objects whose corresponding icons are displayed in the toolbox.

8. The method of claim 1, further comprising:

    arranging the graphically defined event handler procedures to specify a data flow among the instantiations of the program objects within the designer window.

9. The method of claim 1, further comprising:

    arranging the graphically defined event handler procedures to specify a control flow among the instantiations of the program objects within the designer window.

10. The method of claim 1, further comprising:

    textually defining event handler procedures by inputting code in the code window in accordance with one of Visual Basic, Visual C++, Visual J++, Visual Café, Visual InterDev and Delphi.

11. A method for developing an application program, the method comprising:

    displaying on a computer screen a designer window configured to hold symbolic representations of instantiations of program objects;

    placing, in response to first user input, symbolic representations of instantiations of first and second program objects in the designer window, the first program object being associated with an event and the second program object being associated with a property;

    placing, in response to second user input, a graphical wire construct to graphically link the symbolic representations of the instantiations of the first and second program objects;

    generating, in response to placing the graphical wire construct, an event handler procedure that affects the property associated with the second program object upon occurrence of the event associated with the first program object;

    inputting textual code into a code window displayed on the computer screen so as to modify the generated event handler procedure; and

16   incorporating the modified event handler procedure into the application pro-

17 gram.

1 12. The method of claim 11, further comprising:

2   including in each of the symbolic representations of instantiations of the first and

3 second program objects at least one data input, data output, control input or control

4 output terminal to which the graphical wire construct connects in the designer window.

1 13. The method of claim 11, further comprising:

2   modifying by textual code input to the code window a property, event or method

3 associated with the graphical wire construct.

1 14. The method of claim 11, wherein the event associated with the first program

2 object is one of a DataReady event, RunBlock event or ControlIn event.

1 15. The method of claim 11, further comprising:

2   executing at least one method associated with the second program object after

3 the modified event handler procedure executes.

1 16. A computer system configured to develop an application program, the computer

2 system comprising:

3   a processor;

4   a display unit having at least one display screen;

5   a memory adapted to store instructions for execution by the processor, at least a

6 portion of the instructions defining a program-development environment configured to

7 perform the steps of:

8   displaying on a computer screen a toolbox having a plurality of icons,

9   each icon corresponding to a program object that can be selected by a user, the

10   program objects being configured to issue one or more respective events;

11   displaying on the computer screen a form window configured to hold

12   symbolic representations of instantiations of program objects whose icons are

13   selected from the toolbox, the selected program objects having a graphical user

14   interface element;

15   displaying on the computer screen a designer window configured to hold

16   symbolic representations of instantiations of all program objects whose icons are

17   selected from the toolbox;

18   choosing, by the user, to graphically or textually define an event handler

19   procedure corresponding to an instantiation of a selected program object whose

20   symbolic representation is displayed in the designer window;

21   if the user chooses to graphically define the event handler procedure,

22   performing the steps:

23   graphically defining the event handler procedure for the

24   instantiation of the selected program object displayed in the de-

25   signer window;

26   incorporating the graphically defined event handler proce-

27   dure into the application program; and

28   if the user chooses to textually define the event handler procedure, per-

29   forming the steps:

30   textually defining, within a code window displayed on the

31   computer screen, the event handler procedure for the instantiation

32   of the selected program object displayed in the designer window,

33   the code window being configured to accept textual inputs from

34   the user; and

35   incorporating the textually defined event handler proce-

36   dure into the application program.

1   17.   A computer system configured to develop an application program, the computer

2   system comprising:

3   a processor;

4   a display unit having at least one display screen;

5   a memory adapted to store instructions for execution by the processor, at least a

6   portion of the instructions defining a program-development environment configured to

7   perform the steps of:

8   displaying on the display screen a designer window configured to hold

9   symbolic representations of instantiations of program objects;

10   placing, in response to first user input, symbolic representations of in-

11   stantiations of first and second program objects in the designer window, the first

12   program object being associated with an event and the second program object

13   being associated with a property;

14   placing, in response to second user input, a graphical wire construct to

15   graphically link the symbolic representations of the instantiations of the first and

16   second program objects;

17   generating, in response to placing the graphical wire construct, an event

18   handler procedure that affects the property associated with the second program

19   object upon occurrence of the event associated with the first program object;

20   inputting textual code into a code window displayed on the display

21   screen so as to modify the generated event handler procedure; and

22   incorporating the modified event handler procedure into the application

23   program.

1   18.   An apparatus for developing an application program, the apparatus comprising:

2   means for displaying on a computer screen a toolbox having a plurality of icons,

3   each icon corresponding to a program object that can be selected by a user, the pro-

4   gram objects being configured to issue one or more respective events;

5   means for displaying on the computer screen a form window configured to hold

6   symbolic representations of instantiations of program objects whose icons are selected

7   from the toolbox, the selected program objects having a graphical user interface ele-

8   ment;

9   means for displaying on the computer screen a designer window configured to

10   hold symbolic representations of instantiations of all program objects whose icons are

11   selected from the toolbox;

12   means for choosing, by the user, to graphically or textually define an event han-

13   dler procedure corresponding to an instantiation of a selected program object whose

14   symbolic representation is displayed in the designer window;

15   means for graphically defining the event handler procedure for the instantiation

16   of the selected program object displayed in the designer window;

17   means for incorporating the graphically defined event handler procedure into the

18   application program;

19   means for textually defining, within a code window displayed on the computer

20   screen, the event handler procedure for the instantiation of the selected program object

21   displayed in the designer window, the code window being configured to accept textual

22   inputs from the user; and

23   means for incorporating the textually defined event handler procedure into the

24   application program.

1   19.   An apparatus for developing an application program, the apparatus comprising:

2   means for displaying on a computer screen a designer window configured to

3   hold symbolic representations of instantiations of program objects;

4   means for placing, in response to first user input, symbolic representations of

5   instantiations of first and second program objects in the designer window, the first pro-

6   gram object being associated with an event and the second program object being associ-

7   ated with a property;

8   means for placing, in response to second user input, a graphical wire construct

9   to graphically link the symbolic representations of the instantiations of the first and sec-

10   ond program objects;

11   means for generating, in response to placing the graphical wire construct, an

12   event handler procedure that affects the property associated with the second program

13   object upon occurrence of the event associated with the first program object;

14   means for inputting textual code into a code window displayed on the computer

15   screen so as to modify the generated event handler procedure; and

16   means for incorporating the modified event handler procedure into the applica-

17   tion program.

1   20.   A method for developing an application program, the method comprising:

2   displaying on a computer screen a toolbox having a plurality of icons, each icon

3   corresponding to a program object that can be selected by a user, the program objects

4   being configured to issue one or more respective events;

5   displaying on the computer screen a form window configured to hold symbolic

6   representations of instantiations of program objects whose icons are selected from the

7   toolbox, the selected program objects having a graphical user interface element;

8   displaying on the computer screen a designer window configured to hold sym-

9   bolic representations of instantiations of all program objects whose icons are selected

10   from the toolbox;

11   graphically defining event handler procedures for one or more instantiations of

12   the selected program objects displayed in the designer window;

13   textually defining event handler procedures within a code window displayed on

14   the computer screen for one or more instantiations of the selected program objects dis-

15   played in the designer window, the code window being configured to accept textual in-

16   puts from the user; and

17   incorporating the event handler procedures that have been defined graphically

18   and textually into the application program.

21.   A computer system configured to develop an application program, the computer

system comprising:

a processor;

a display unit having at least one display screen;

a memory adapted to store instructions for execution by the processor, at

least a portion of the instructions defining a program-development environment config-

ured to perform the steps of:

displaying on the display screen a toolbox having a plurality of icons,

each icon corresponding to a program object that can be selected by the user,

the program objects being configured to issue one or more respective events;

displaying on the display screen a form window configured to hold sym-

bolic representations of instantiations of program objects whose icons are se-

lected from the toolbox, the selected program objects having a graphical user

interface element;

displaying on the display screen a designer window configured to hold

symbolic representations of instantiations of all program objects whose icons are

selected from the toolbox;

graphically defining event handler procedures for one or more instantia-

tions of the selected program objects displayed in the designer window;

textually defining event handler procedures within a code window dis-

played on the display screen for one or more instantiations of the selected pro-

gram objects displayed in the designer window, the code window being config-

ured to accept textual inputs from the user; and

incorporating the event handler procedures that have been defined

graphically and textually into the application program.

1   22.   An apparatus for developing an application program, the apparatus comprising:

2   means for displaying on a computer screen a toolbox having a plurality of icons,

3 each icon corresponding to a program object that can be selected by a user, the pro-

4 gram objects being configured to issue one or more respective events;

5   means for displaying on the computer screen a form window configured to hold

6 symbolic representations of instantiations of program objects whose icons are selected

7 from the toolbox, the selected program objects having a graphical user interface ele-

8 ment;

9   means for displaying on the computer screen a designer window configured to

10 hold symbolic representations of instantiations of all program objects whose icons are

11 selected from the toolbox;

12   means for graphically defining event handler procedures for one or more instan-

13 tiations of the selected program objects displayed in the designer window;

14   means for textually defining event handler procedures within a code window

15 displayed on the computer screen for one or more instantiations of the selected program

16 objects displayed in the designer window, the code window being configured to accept

17 textual inputs from the user; and

18   means for incorporating the event handler procedures that have been defined

19 graphically and textually into the application program.